

HAMPTON RIVER & HARBOR
AND RYE HARBOR
NEW HAMPSHIRE

PRELIMINARY EXAMINATION
REVIEW OF REPORTS



CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION, BOSTON, MASS.

MARCH 23, 1956

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HAMPTON RIVER AND HARBOR
AND
RYE HARBOR
NEW HAMPSHIRE

Preliminary Examination
(Review of Reports)

SYLLABUS

The Division Engineer finds that existing and prospective small craft navigation at Hampton River and Harbor, and at Rye Harbor, New Hampshire is sufficient to warrant further consideration of the improvements desired by local interests. He therefore recommends surveys of both locations to determine the extent and cost of the improvement warranted, and the local cooperation that should be required.

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DEPARTMENT OF THE ARMY
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OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

NEDGW

23 March 1956

SUBJECT: Preliminary Examination (Review of Reports) of Hampton River and Harbor, and Rye Harbor, New Hampshire.

TO: Chief of Engineers, Department of the Army, Washington 25, D. C.

AUTHORITY

1. This report is submitted in compliance with the following resolutions relating to Hampton River and Harbor and to Rye Harbor, New Hampshire, adopted by the Committee on Public Works of the House of Representatives, United States, on June 2, 1949, and on February 20, 1951, respectively:

RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Hampton River and Harbor, New Hampshire, submitted in House Document No. 247, 58th Congress, 2nd Session, and subsequent reports with a view to determining whether provision of anchorage basins and channel and other improvements for navigation is advisable at this time.

RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Rye Harbor, New Hampshire, published in House Document No. 301, 61st Congress, 2nd Session, with a view to determining if improvement of the harbor in the interest of navigation is advisable at this time.

2. Reports of preliminary examination scope for these locations were authorized by the Chief of Engineers on July 5, 1949 for Hampton River and Harbor, and on March 15, 1951, for Rye Harbor.

SCOPE OF EXAMINATION

3. In the preparation of this report, consideration of the localities has been limited to office study of the data obtained from existing records, from local representatives, and from public hearings. No detailed field work has been undertaken.

DESCRIPTION

4. Both Rye and Hampton Harbors are located along the 17 mile coastline of New Hampshire, Rye Harbor lying about 5 miles south of Portsmouth Harbor; and Hampton Harbor, at the mouth of Hampton River, lying about 13 miles south of Portsmouth Harbor and about 5 miles north of Newburyport Harbor, Massachusetts.

5. Hampton River is a shallow, narrow stream flowing southeastward through marsh areas and receiving a number of lesser streams. It enters the Atlantic Ocean across a barrier beach, behind which lies Hampton Harbor. The entrance to the harbor, formerly a migrating inlet, now stabilized by stone jetties, is about 600 yards long, with widths varying from 300 to 500 yards. Although the entrance is obstructed by a bar, natural depths within the channel inside the bar range from 4.0 to 17.5 feet at mean low water. Above the highway bridge which crosses the entrance channel just at the harbor itself, the harbor is roughly rectangular, with a total area of about 300 acres at high water and natural depths ranging from 1.0 to 10.0 feet at mean low water.

6. The entrance to the harbor is exposed to easterly winds. A group of unmarked rocks just inside the harbor entrance endanger navigation. Prior to recent dredging by the State of New Hampshire, shoal waters and sand bars within the harbor, and sand deposits reducing mooring spaces and narrowing approaches to docks made navigation difficult.

7. Rye Harbor is small, roughly rectangular indentation, or cove, with a total area of about 39 acres. The entrance to the harbor is between breakwaters, one extending southward from Ragged Neck Point on the north, and the other extending northeastward from the point on the south side of the harbor entrance. Each of these breakwaters is about 500 feet long and extends about 6 feet above high water level. The channel between them is about 100 feet wide, with depths ranging from 5 to 11 feet. The dredged anchorage basin within the harbor has an area of about 10 acres, with depths at present ranging from about 1.0 to 6.0 feet over the greater part; the remaining area is bare at low water.

8. Although somewhat protected by the existing breakwaters, the harbor is exposed to easterly storms. A group of unmarked rocks on the south side of the entrance channel endangers navigation.

9. Prevailing winds along the New Hampshire coast blow from westerly directions, or offshore with respect to the harbor areas. Winds which blow onshore are generally from the northeast quadrant, and most severe gales blow from the same quadrant. Winds of lesser intensity blow offshore from the northwest and southwest quadrants. During the period 1 April to 30 September, the nearest fog signal, at Portsmouth, operates less than 7 percent of the total time. The mean range of tide in both Hampton and Rye Harbors is 8.3 feet. The locality is shown on Coast and Geodetic Survey Chart No. 1206 and on the maps accompanying this report.

TRIBUTARY AREA

10. Hampton River and Hampton and Rye Harbors provide the small boat facilities for the coastal towns of Seabrook, Hampton, North Hampton, and Rye, and for the immediately inland town of Hampton Falls, which is bounded in part by Hampton River and Hampton Harbor. The coastline of these towns comprises about 15 miles of New Hampshire's total 17 mile coastline, and the towns together share the majority of the very heavy recreational development of the State's coastal region. The coastal region as a whole has one eighth of the State's recreational accommodations. From the Massachusetts boundary at Seabrook north through Hampton, North Hampton, and Rye Beaches, seasonal residence, and resorts with amusement accessories extend almost without interruption along the New Hampshire shore, with an exceptional concentration of recreational development in the Town of Hampton itself. The growth of recreational property in this area since 1945 has been unusually great; between 1945 and 1952, it is reported that 43 new hotels and inns, 56 new motels and groups of cabins and 918 seasonal residences were constructed in the total coastal area, representing in all groups increases of approximately 50 percent or more. Although figures since 1952 are not readily available, there is ample evidence that similar unusual growth has continued. Records indicate that between 1940 and 1950, population increases in Hampton, North Hampton, and Rye were 33 percent, 35 percent, and 50 percent respectively as compared to a statewide increase of 8.5 percent. Summer population in Hampton was estimated to be in excess of 21,000 in 1952.

11. The area immediately tributary to Hampton River and Harbor consists of the coastal towns of Hampton on the north, Seabrook on the south, and Hampton Falls on the west. In 1950, the combined population of the three towns was 5,264, Hampton itself having 2,877, Seabrook 1,788, and Hampton Falls 629. Seasonal residences, cabins and motels increased in Hampton and Seabrook between 1945 and 1952 more than in any other coastal New Hampshire town. In Hampton, seasonal residence increased during the period by about 50 percent, and cabins and motels by 430 percent, a total of over 80 motels, cabins, and hotels being listed for the town in the 1954 New Hampshire Register. In Seabrook, seasonal residences are reported to have increased over 200 percent during the same period. In both towns additional commercial properties appeared during the same years. Although more recent statistics are not readily available, the rapid growth is known to have continued during the past three years. In Hampton, recreational property constituted about 60 percent of the total 1954 property valuation of \$11,210,320. In Seabrook, it constituted about 52 percent of the total 1954 valuation of \$2,255,880. Both towns are served by the Boston and Maine Railroad, and by main United States highways.

12. The area immediately tributary to Rye Harbor is the town of Rye, which had a year round population of 1,982 in 1950. Established for decades as a summer resort, Rye, like other New Hampshire coastal towns, has experienced very rapid growth since 1945. Between 1945 and 1952, seasonal residence are reported to have increased by about 150 dwellings,

and commercial establishments by 47. Of the total property valuation of \$4,221,160 in 1954, over 50 percent was estimated to be of seasonal residences and other recreational property. Some land bordering on and near the harbor is owned by the State of New Hampshire and operated by the Forestry and Recreation Commission. The Boston and Maine Railroad maintains a station 2 miles west of the harbor, and Route 1A, a main highway, lies immediately adjacent to the harbor.

BRIDGES

13. Hampton Harbor is crossed by one highway bridge, located about 600 yards above the entrance over the bar. Constructed by the State of New Hampshire in 1949, the bridge is a single leaf bascule type, having a horizontal clearance of 42.7 feet, and a closed vertical clearance of 18.8 feet at mean high water. There are no bridges which affect navigation in Rye Harbor. It is understood that there is a local request to replace the fixed bridge across the creek emptying into the southwest corner of the harbor by a lift bridge.

14. Hampton River and Harbor have been the subject of three previous reports, and Rye Harbor has been the subject of two, all of preliminary examination scope. For Hampton River and Harbor, the first report, published in the Annual Report of the Chief of Engineers for 1889, was unfavorable to a plan for improving the river to a point near Hampton Village. The second, the report under review, submitted in 1903 and published in House Document No. 247, 58th Congress, 2nd Session, was also unfavorable to improvement of the river, in view of its shallow depths, the bar across its mouth, and the lack of existing or prospective commerce. The most recent report, an unpublished preliminary examination submitted in 1930, was unfavorable to a plan for stabilizing the river mouth and protecting the beaches against erosion. This report found that at that time the principal problem was one of beach erosion rather than of navigation.

15. For Rye Harbor previous preliminary examination reports have been submitted in 1909 and 1930. The first of these, the report under review, published in House Document No. 301, 61st Congress, 2nd Session, found that the cost of necessary dredging and breakwater construction was disproportionate to the then existing or prospective commerce. The second report, unpublished, also found that the cost of the desired breakwater to provide safe anchorage at all seasons, and an adequate channel within the harbor to the existing wharf was disproportionate to the existing commercial and recreational use of the harbor.

16. It is pertinent to this report that since the 1930 unpublished preliminary examination report on Hampton River and Harbor, three studies of beach erosion problems at Hampton have been made by the Corps of Engineers in cooperation with the State of New Hampshire. The first of these, prepared by the Beach Erosion Board as a result of a formal application

for a cooperative beach erosion study by the New Hampshire Shore and Beach Preservation and Development Commission, and dated July 15, 1932, found that serious erosion at the south end of Hampton Beach resulted from migration of the Harbor inlet, and was probably attributable to tidal currents. Need for protection was found to be urgent. Stabilization of the harbor inlet by jetty construction, and placement of sand fill on the beach were recommended. A second report, dated April 15, 1942, and prepared under an agreement providing for continuing studies, found dikes and jetties constructed in accordance with earlier recommendations to be successful in stabilizing the harbor inlet, and in protecting the southern end of the beach, but reported serious erosion and storm damage at Hampton Beach in the vicinity of the business center and immediately south thereof. It further reported a general trend of accretion in all areas except the backshore areas adjacent to the business center, extensive shoaling of the harbor in the period from 1935 to 1942, and no need for protective works at Seabrook Beach. The report recommended a protective seawall along the business center of the beach, with spur groins extending seaward to prevent further erosion and to effect accretion. A third report, dated August 14, 1953, and published in House Document No. 325, 83rd Congress, 2nd Session, recommended the adoption of a project for placement of sand fill on Hampton Beach, with Federal contribution of one third of the first cost.

EXISTING CORPS OF ENGINEERS PROJECT

17. There is no existing Federal project for navigation either at Hampton River and Harbor or at Rye Harbor. However, a Beach Erosion Project for the improvement of Hampton Beach was adopted on September 3, 1954. This project provides for Federal participation in the amount of one third of the first cost of widening to a general width of 150 feet by direct placement of sand fill approximately 5,200 feet of beach adjacent to and extending northward from Haverhill Street, with an added widening along 1,250 feet of the northern end of the fill area. This project was completed by the State of New Hampshire in December of 1955 using sand dredged from Hampton River and Harbor.

LOCAL COOPERATION ON EXISTING PROJECT

18. In accordance with the provisions of Public Law 727, approved by Congress in 1946, Federal participation in the existing beach erosion project for Hampton Beach is limited to one third the first cost of construction. In addition to contributing two thirds of the first cost of construction, conditions of local cooperation required that local interests assure maintenance of the protective and improvement measure during its useful life; provide all necessary lands, easements, and rights-of-way; hold and save the United States free from all claims for damages; assure that water pollution endangering the health of bathers will not be permitted; assure continued public ownership of the shore and administration for public use only; and agree to approval by the Chief of Engineers prior to commencement of work by local authorities, of detailed plans, specifications, arrangements for prosecuting the work, adequacy of proposed work and other assurances. All of these conditions were met

by the State of New Hampshire. It is to be noted that specified maintenance requirements for the project include the artificial placement of an estimated 22,700 cubic yards of sand on Hampton Beach annually. The river and harbor are logical sources of this sand.

OTHER IMPROVEMENTS

19. The State of New Hampshire has expended substantial sums in extensive improvement to both Hampton and Rye Harbors, as well as in the improvement of Hampton Beach. In 1935, following generally the recommendations of the report of the Beach Erosion Board in 1932, the State of New Hampshire constructed stone jetties and dikes to stabilize the entrance of Hampton Harbor; dredged certain areas in the harbor using the sand so removed to rebuild the beach on the northerly side of the inlet as a State Park; and erected a pile and timber pier with a runway and float landing on the north bank of the river a short distance above the highway bridge. In 1941, the State further dredged a channel 2,700 feet long, 75 feet wide, and 6 feet deep at mean low water. This channel is located 500 feet west of and parallel to the south approach of the new toll bridge, and leads to the State boat landing constructed on the Seabrook side of the harbor two years later.

20. In 1955, the State of New Hampshire, partially in connection with providing sand fill in accordance with the Federal Beach Erosion Project for Hampton Beach adopted in 1954, dredged the Seabrook channel to a depth of 7 feet for a width of 75 feet, and two anchorage areas in the harbor and river to depths of 7 feet or more. In addition the State plans to dredge the entrance channel to a depth of 8 feet for a width of 100 feet in the Spring of 1956, as a part of the same dredging project. A total of over 500,000 cubic yards of material will be removed in connection with this project.

21. State expenditures in these navigation improvements to Hampton Harbor are estimated to exceed \$800,000. In addition, the State is estimated to have expended upwards of \$1,500,000 in the improvement of Hampton Beach by the construction of seawalls, revetment, and promenades, exclusive of an extensive program of highway improvements directly affecting the harbor and beach area, making them easily accessible and highly desirable recreational sites.

22. At Rye Harbor, the State of New Hampshire has likewise made substantial improvements, although less strikingly extensive than those at Hampton Harbor and Beach. In 1939, following a study made in 1934-35 the State completed two short breakwaters at the entrance to the harbor, and in 1941 completed the dredging of a channel 100 feet wide and 10 feet deep, and an anchorage 10 acres in area and 10 feet deep. Expenditures by the State of New Hampshire for the improvement of Rye Harbor are reported to be in excess of \$200,000.

TERMINAL AND TRANSFER FACILITIES

23. There are a number of piers, both public and private, at both Hampton and Rye Harbors. At Hampton Harbor there are, in all, five piers, two public and three private, although all the latter are open to the public. Of the two public piers, one is a pile and timber structure located on the Hampton side, and has a berthing space of about 35 feet; the other is located on the Seabrook side. The private piers are all located on the Hampton side, the largest having a berthing space of about 40 feet. Gasoline can be obtained at this pier.

24. At Rye Harbor, there are two piers on the south side of the harbor, the first inside the entrance being the landing of the Rye Harbor Yacht Club. The second, formerly operated by a commercial eating establishment, and utilized by charter boats, is located at the inner end of the harbor. The berths at both of these piers are presently bare at low water. Available supplies are limited to fuel which can be obtained at the Yacht Club landing.

25. At Hampton Harbor, the State contemplates improvement of the State pier. At Rye Harbor, the State contemplates various docking improvements but is delaying construction pending the crystallization of plans for harbor improvement.

IMPROVEMENT DESIRED

26. In order to give local interests an opportunity to express their views with respect to the improvement of Hampton River and Harbor and of Rye Harbor, public hearings were held at Rye and at Hampton Beach, New Hampshire, on November 29, 1955. Both hearings were attended by representatives of the New Hampshire Department of Public Works and Highways, the New Hampshire Forestry and Recreation Division, the New Hampshire Seacoast Regional Development Association, and the New Hampshire Marine Fisheries Association, and by representatives of New England yachting interests, as well as by representatives of the Town governments of Hampton and Rye, and interested individual commercial fishing interests and owners of recreational craft.

27. At Hampton, local interests expressed a desire for dredging at the harbor entrance and within the harbor to provide harbor channels and anchorage areas of 10 foot depth. They further expressed a desire for heightening and extending existing jetties in order to afford greater protection within the entrance channel and in the harbor proper.

28. A representative of the New Hampshire Forestry and Recreation Commission expressed the State's concern for the inadequate facilities which the harbor provided for the increasing number of commercial and recreational boatmen in the area. The fact that harbor improvements had not kept pace with the rapid increase in highway, hotel, and other recreational facilities was cited.

29. Owners of party fishing boats, and of small boat rental services cited their concern for the substantial number of days when in spite of fair weather, conditions over the entrance bar made it unsafe for small boat navigation. They further cited extensive delays suffered by party boats.

30. Representatives of various recreational craft interests cited the extreme limitations which natural conditions in the river and harbor place upon the use of such boats. It was observed that craft normally anchored in the river are prevented from going down the river into the harbor by sand bars in the river. It was further observed that bars and sand deposits in much of the river and harbor, prior to the recent State dredging of the river and harbor, deprived many boat owners of substantial percentages of their potential boat use. One representative noted that there are 38 yacht clubs within a 75 mile area north and south of Hampton Harbor, and that six of these clubs alone, replying to a letter, had indicated that almost 100 of their boats might be expected to make transient use of Hampton Harbor if it were provided with an adequately protected entrance.

31. At Rye Harbor local interests expressed a desire for an entrance channel and an anchorage basin dredged to a depth of 10 feet. They further expressed the desire for the improvement of the existing jetties to afford greater protection against storms from the south through the east, and the elimination of dangerous cross currents at the harbor entrance; and for the removal of rock shoals in the approach to the harbor entrance.

32. A representative of the New Hampshire State Forestry and Recreation Commission noted that the State was concerned with the inadequacy of Rye Harbor to accommodate the increasing demands of both recreational and fishing vessels in the immediate area. Observing that the economy of the coastal area of New Hampshire was heavily dependent upon recreational activities, he expressed the belief that inadequate harbor facilities along the coast meant a loss of potential business incidental to the rapid increases in recreational boating. He further indicated that the State intended to develop its fishing potential and that improvements at Rye Harbor were considered significant to such development.

33. A representative of the Special Advisory Commission on Marine Fisheries indicated the concern of the New Hampshire Fish and Game Department for the development of more adequate facilities for fishermen at Rye Harbor. Individual fishermen cited delays experienced as a result of inadequate depths and undue exposure in the harbor. They further cited the fact that the condition of the harbor was such that they could not meet an existing demand to take out fishing parties, although they had formerly been able to do so following the improvement of the harbor by the State in 1941.

34. A representative of the New Hampshire Department of Public Works and Highways stated that the State had for some time planned the relocation

of Route 1A near Rye Harbor, but that the work would not be undertaken until plans for the development of the harbor were settled, in order that the proposed highway improvements might best serve the needs of the improved harbor.

35. A representative of the New Hampshire Seacoast Development Association cited the inconvenience experienced by present pleasure boat owners residing at Rye, who are forced to base their boats elsewhere for lack of adequate depth and protection at Rye. Several individuals cited instances of additional pleasure craft being constructed to use Rye Harbor as their home base if adequate facilities were available.

COMMERCE

36. Although no accurate commercial statistics are available at this time, substantial amounts of fish, principally lobster, are known to be landed annually at both Hampton and Rye Harbors. An estimate made in 1950 placed the value of the catch landed at Hampton at about \$100,000 annually, and it is claimed that this has increased greatly since that time. Although the degree of increase cannot be ascertained at this time, recorded increases in the fishing fleet since 1949 strongly indicate the probability of increased value of the catch since the 1950 estimate. At Rye Harbor, it is tentatively estimated that the catch landed is about half that landed at Hampton. At Hampton, in addition to the fishing fleet, 10 party boats carrying fishing and cruising parties, operate regularly. The annual gross income of the party boat business in Hampton was claimed, in 1954, to be approximately \$100,000, and since that time additional party boats have been added.

VESSEL TRAFFIC

37. No exact statistics on vessel traffic in either Hampton or Rye Harbors are available at this time. The existing fleet at Hampton River and Harbor, however, consists of 97 recreational craft ranging in length from 10 to 40 feet; and commercial craft which include about 40 lobster boats ranging up to 40 feet in length, 10 party boats of from 40 to 50 feet in length, and a substantial number of small craft rented as skiffs or outboards. Of the 97 recreational craft, 40 are based in the harbor itself, and 57 are based in the river. A 1950 report placed the number of trips made by passenger vessels at 1680. In 1955, it was reported that several hundred transient recreational craft entered the harbor.

38. At Rye Harbor, the existing fleet consists of about 20 recreational craft, the majority of which range from 22 to 40 feet in length; and 23 lobster boats, 16 of which are inboard powered.

DIFFICULTIES ATTENDING NAVIGATION

39. At Hampton Harbor difficulties attending navigation are those resulting from lack of adequate jetty protection, which makes the entrance difficult to navigate, and from shifting sand bars and deposits

apparently caused in part by inadequate length of the existing jetties. Recent dredging by the State of New Hampshire has removed most of these obstructions, but previous experience indicates that shoaling of the bar at the entrance may be relatively rapid until existing jetties are modified. In addition, several rock shoals located just inside the harbor entrance above the highway bridge obstruct navigation.

40. At Rye Harbor, navigation difficulties are those resulting from inadequate depth in the entrance and basin, from rocks obstructing the south side of the approach to the harbor, and from inadequate protection of the harbor against winds from the south through the east.

WATER POWER AND OTHER SPECIAL SUBJECTS

41. The waterways under consideration are tidal. There are no problems of water power, flood control, pollution or related subjects involved in the investigation of either Rye Harbor, or of Hampton River and Harbor. None of the contemplated work would have an adverse effect on wild life or shellfish.

SHORE LINE CHANGES

42. No problems of shore line changes appear to exist at Rye Harbor in connection with the desired improvements, except insofar as deposition of dredged material on adjacent marshland might improve the existing shore adjacent to the harbor.

43. Hampton Beach and to a limited extent Seabrook Beach, adjacent to Hampton Harbor entrance to the north and south respectively, have a long history of erosion. Hampton Harbor entrance was formerly a migrating inlet, now stabilized by jetties constructed by the State of New Hampshire in accordance with the recommendations of a Cooperative Beach Erosion study. The proposed extension of the existing jetties for the purpose of providing greater protection to navigation will more effectively impound sand on either side of the harbor entrance and will reduce shoaling in the entrance channel. Some additional accretion along the beach areas immediately adjacent to the inlet will result. It is not anticipated that additional accretion resulting from the extension of the north jetty will materially reduce the number of cubic yards of sand required annually to maintain the improvement of Hampton Beach. It is believed that the proposed extension of the south jetty will increase accretion at the northern end of Seabrook Beach, with beneficial effects. The State of New Hampshire has used material hydraulically dredged from Hampton River and Harbor and from the Seabrook channel as artificial fill on both Hampton and Seabrook Beaches. It is anticipated that similar future requirements for beach fill would use these harbor and channel areas as borrow areas.

DISCUSSION

44. Hampton and Rye Harbors are the most highly developed of New Hampshire's three coastal small boat harbors, the third being Little Harbor,

just south of the commercial harbor at Portsmouth. Rye Harbor, located about 5 miles south of Portsmouth Harbor, is a roughly rectangular improved cove with an area of about 39 acres. The entrance to the harbor lies between 500 foot breakwaters constructed by the State of New Hampshire. The entrance channel is about 500 feet wide, with depths ranging from 5 to 11 feet in 1952. The improved anchorage within the harbor is about 10 acres in area, with depths at present of from 1.0 to 6.0 feet over the greater part, the remaining area being bare at low water.

45. Hampton Harbor, New Hampshire, located about 8 miles south of Rye Harbor, and about 5 miles north of Newburyport Harbor, in Massachusetts, is a large irregular body of water about 300 acres in area, lying behind a barrier beach, with natural depths ranging from 1.0 to 10.0 feet at mean low water. The entrance to the harbor, formerly a migrating inlet but now stabilized by jetties constructed by the State of New Hampshire, is about 600 yards long, with widths varying from 300 to 500 yards. Except for a bar which forms at the entrance to the harbor channel, natural depths in the channel range from 4.0 to 17.5 feet. Hampton River, a narrow, shallow stream flows southeastward through marshes into the harbor. A highway bridge with horizontal and closed vertical clearances of 42.7 and 18.8 feet respectively, crosses the entrance channel at the harbor entrance itself.

46. The entrances to both Rye and Hampton Harbors are exposed to easterly winds. At Rye Harbor a group of unmarked rocks on the south side of the entrance channel endangers navigation. At Hampton Harbor navigation is rendered difficult by unmarked rocks just inside the harbor entrance and by sand deposits in the entrance channel, the harbor, and the river.

47. Both Rye and Hampton Harbors serve the heavily developed recreational coastal area of New Hampshire. Hampton River and Harbor are bordered by the towns of Seabrook, Hampton Falls, and Hampton. Rye Harbor lies in the Town of Rye. These towns, together with North Hampton, located between Rye and Hampton, include approximately 15 miles of New Hampshire's 17 miles of coastline. Traditionally a recreational and resort area, yielding an estimated one eighth of the State's total recreational income, these coastal towns have experienced phenomenal growth in seasonal residences and recreational properties since 1945. The total property valuation of the five towns in 1954 approximated \$20,000,000, of which more than 50 percent was in recreational property.

48. Hampton and Seabrook Beaches, extending northward and southward respectively from Hampton Harbor entrance, provide excellent bathing facilities, and Hampton Beach, stated-owned and controlled, is the only commercial beach on the New Hampshire coast. Hampton is the most densely developed recreational area in the entire coastal region. With a permanent population of 2,847 in 1950, the town is estimated to have a summer population of 2,500, with daily visitors annually totaling substantially in excess of 1,000,000.

49. Although development in the vicinity of Rye Harbor has been more limited and of a different nature than at Hampton, it has nonetheless been heavy. The year round population of 1,982 in 1950 represented an increase of 59 percent between 1940 and 1950. Between 1945 and 1952, over 150 seasonal residences were constructed in the town, and the number is known to have increased further since 1952. In general, recreational development in Rye has been of a less heavily commercial nature than at Hampton, increase in individual seasonal residences being its most marked aspect.

50. The entire New Hampshire coastal area is served by the Boston and Maine Railroad, many bus lines, and a series of main highways. The Portland division of the Boston and Maine Railroad maintains daily passenger service to Seabrook, Hampton, and North Hampton, with connecting bus service to shore areas. U. S. Route No. 1 passes through Seabrook, Hampton Falls, Hampton and North Hampton. Route 1A loops out from Route 1 at Salisbury, Massachusetts, and follows the entire New Hampshire shore northward. Merging with the main arteries in New Hampshire, numerous lesser roads facilitate traffic to the shore itself.

51. Past local interest in Federal improvement of both Rye and Hampton Harbors is reflected by preliminary examination reports in 1889, 1903, and 1930 on Hampton Harbor; and in 1909, and 1930 on Rye Harbor. All these previous reports were unfavorable to desired improvements in view of the limitations of the existing or prospective use of the harbors at the times the reports were made. The seriousness of the erosion problems at Hampton beach, and their intimate relation to the stabilization of the harbor inlet, is reflected in three Beach Erosion Studies, conducted by the Corps of Engineers in cooperation with the State of New Hampshire. The latest report resulted in the adoption by the United States of a cooperative Beach Erosion Project for Hampton Beach, for the placement of 340,000 cubic yards of sand on the beach.

52. The interest of the State of New Hampshire in the development of its coastal recreational resources at Hampton and Rye is testified by the extensive improvements accomplished by the State of those localities since 1930. At Hampton, aside from upwards of \$1,500,000 expended on improvements to Hampton Beach itself, and additional sums expended on related highway construction, the State has expended an estimated \$800,000 in the construction of jetties at Hampton Harbor entrance, and in dredging within the channel, harbor, and river in 1935, 1941, and 1955. In addition, in 1943 the State constructed a State landing on the Seabrook side of the harbor, and subsequently constructed a second landing on the Hampton side. The State plans further improvement in the harbor facilities.

53. At Rye Harbor, the State in 1939 constructed two entrance breakwaters, and in 1941 dredged a 10 foot entrance channel 100 feet wide, and a 10 foot anchorage basin about 10 acres in area. State expenditures for improvement at Rye Harbor are estimated at approximately \$200,000. The State Planning and Development Commission outlined master plans in 1935

for the recreational development of 158 acres of publicly owned land now used as the State Military Reservation, the acquisition of additional land, and the construction of piers, floats, and mooring facilities within an improved harbor. Currently desired improvements are envisioned as a stage in the execution of this projected improvement by the State of New Hampshire.

54. Local interests now desire improvement of both Rye Harbor, and of Hampton River and Harbor by the extension of existing jetties to provide more adequate protection for small craft entering the harbors; the removal of certain obstructing rocks which are hazardous to navigation; and the dredging of anchorage basins. At Hampton Harbor, the extension of existing jetties is desired not only to provide greater protection, but also to prevent the rapid shoaling of the entrance channel. At both locations, proposed improvements are desired to serve both pleasure and fishing fleets which use the harbors as home ports at present, and to serve prospective expansion of those fleets.

55. Benefits to navigation resulting from the desired improvements at Hampton River and Harbor would be those accruing from the reduction of fishing time lost by existing fishing fleet; from the increase in the fishing catch; from the reduction of time lost by party boats based in the harbor; from expanded party boat commerce; from increased use of the existing pleasure fleet; and from the prospective increase in the pleasure fleet which, given the intensely developed recreational nature of the area, is expected to be substantial. Benefits accruing to fishing are considered to be general in nature; all others are considered to be equally general and local in nature. In addition, entirely local benefits would accrue to the proposed improvement from enhanced land values resulting from the disposition of dredged material, both in the initial construction, and in subsequent maintenance dredging.

56. Benefits to navigation resulting from the desired improvements at Rye Harbor would be those accruing to the existing fishing fleet by virtue of the reduction in time lost by elimination of hazardous entrance conditions; from the increase in the fishing catch; from the encouragement of an expanded fishing fleet; and from increased use and expansion of the existing pleasure fleet. Benefits accruing to fishing are considered to be general; all others are considered to be equally of general and local character. Additional local benefits may result from the deposition of dredged material upon adjacent state-owned land for which the State envisions future recreational development.

57. The substantial lobster catch currently landed at Hampton Harbor, the proximity of the harbor to excellent fishing grounds, and the ready marketability of the catch in a heavily developed resort area with an expanding population, indicate that increase in the catch might reasonably be expected if harbor conditions were improved. The already very substantial party boat business, which has increased markedly during recent years, and the evidence of a substantial expansion

of the pleasure fleet in recent years under the impetus of improvements made by the State of New Hampshire indicate that desired improvements would lead to very substantial benefits accruing to recreational craft.

58. The costs of providing locally desired improvements at Hampton River and Harbor, and the optimum improvement to be provided are influenced by several factors. The fact that the State of New Hampshire has recently undertaken and largely completed extensive dredging operations in the entrance channel, the harbor, and the river partially to provide sand fill for Hampton Beach, but also to accomplish direct navigation improvement will very substantially reduce the first costs of providing dredged depths and areas desired by local interests. On the other hand, preliminary studies indicate that shoaling in the harbor, river, and entrance channel is unusually rapid under existing conditions. The estimated cost of constructing north and south jetties sufficiently extensive to eliminate a major percentage of such shoaling throughout the harbor would exceed the high estimated maintenance costs for dredging.

59. However, the maintenance of the Beach Erosion Project adopted for Hampton Beach requires the annual placement of an estimated 22,700 cubic yards of sand on Hampton Beach by the State of New Hampshire. In the past, sand fill for Hampton Beach has been hydraulically dredged from the harbor and river, and it is anticipated that this source will continue to be used. Given this circumstance, it is considered reasonable to provide a jetty extension sufficient to give desired protection to navigation and at the same time materially reduce annual shoaling in the entrance channel.

60. At Rye Harbor, as at Hampton Harbor, improved harbor facilities coupled with an expanding resort market and the accessibility of good fishing grounds may reasonably be expected to result in an expanded fishing commerce. Desired dredging and jetty construction at Rye Harbor, by providing more adequate protected anchorage areas and safe entrance, while not resulting in as large a percentage of increase in use to the relatively small existing pleasure fleet, may be expected, by virtue of the harbor's location, to encourage a very substantial expansion of that fleet. It may be anticipated that the class of craft in the prospective pleasure fleet at Rye Harbor will be somewhat larger than that at Hampton, as indicated by the relative distribution of craft in the existing fleet. The anticipated cost of the desired improvement at Rye Harbor would be relatively low compared to that of Hampton River and Harbor, and preliminary studies indicate that some improvement is warranted.

61. Prospective general benefits accruing from locally desired improvements at Hampton River and Harbor and at Rye Harbor would probably be insufficient to warrant improvement entirely at Federal expense at either location. The proportion of purely local benefits would probably require local assumption of a portion of the cost of improvement and maintenance. The considerable interest of the State of New Hampshire, as evidenced by the expenditure of an estimated \$1,000,000 in the improvement

of these harbors for navigation in the past 20 years, in addition to substantially larger sums expended in the improvement of adjacent beaches and highway, is considered sufficient evidence of the willingness of local interests to participate in the work. Such interest is considered to be further evidenced by expressions made by State representatives at the public hearings conducted in connection with this report.

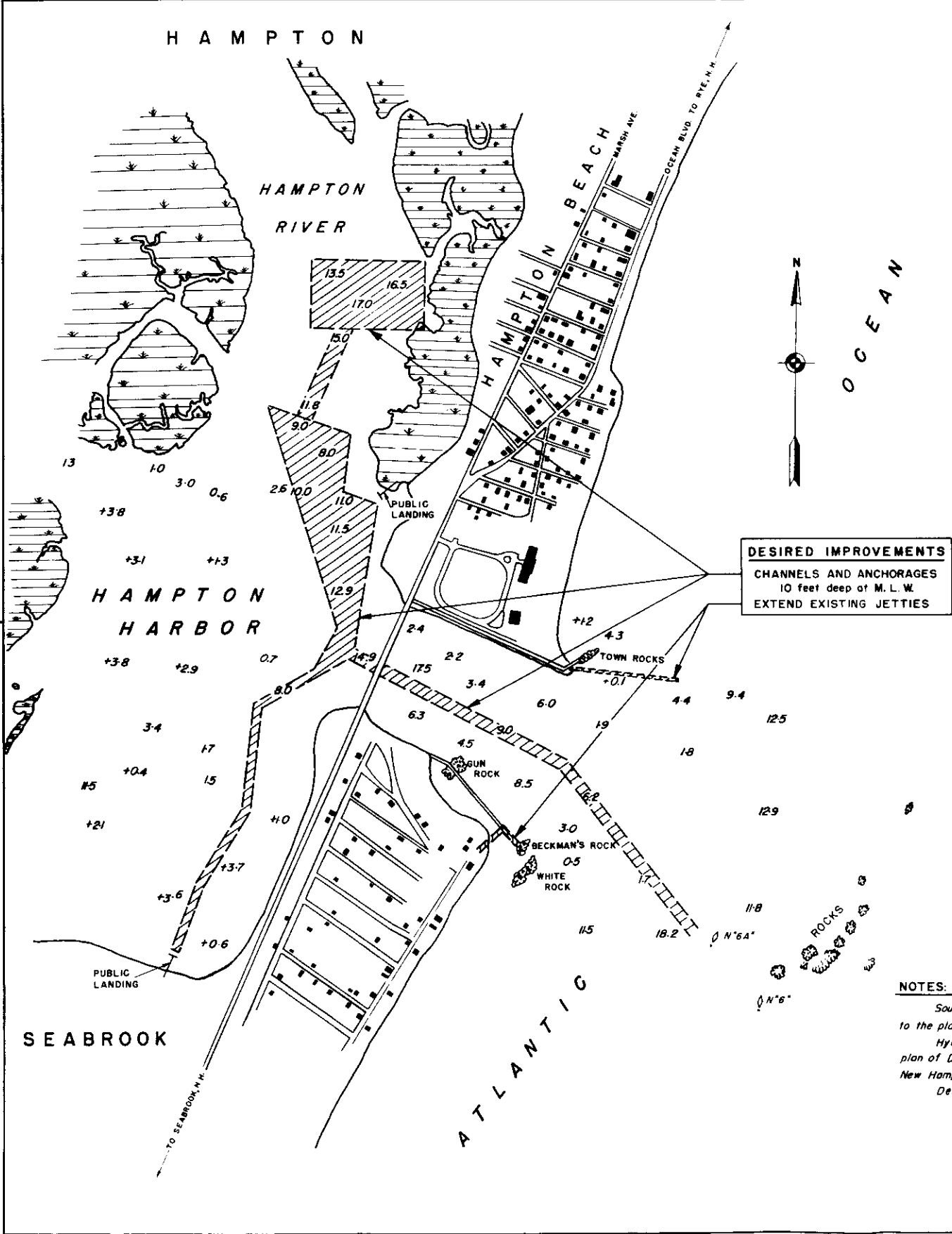
CONCLUSION

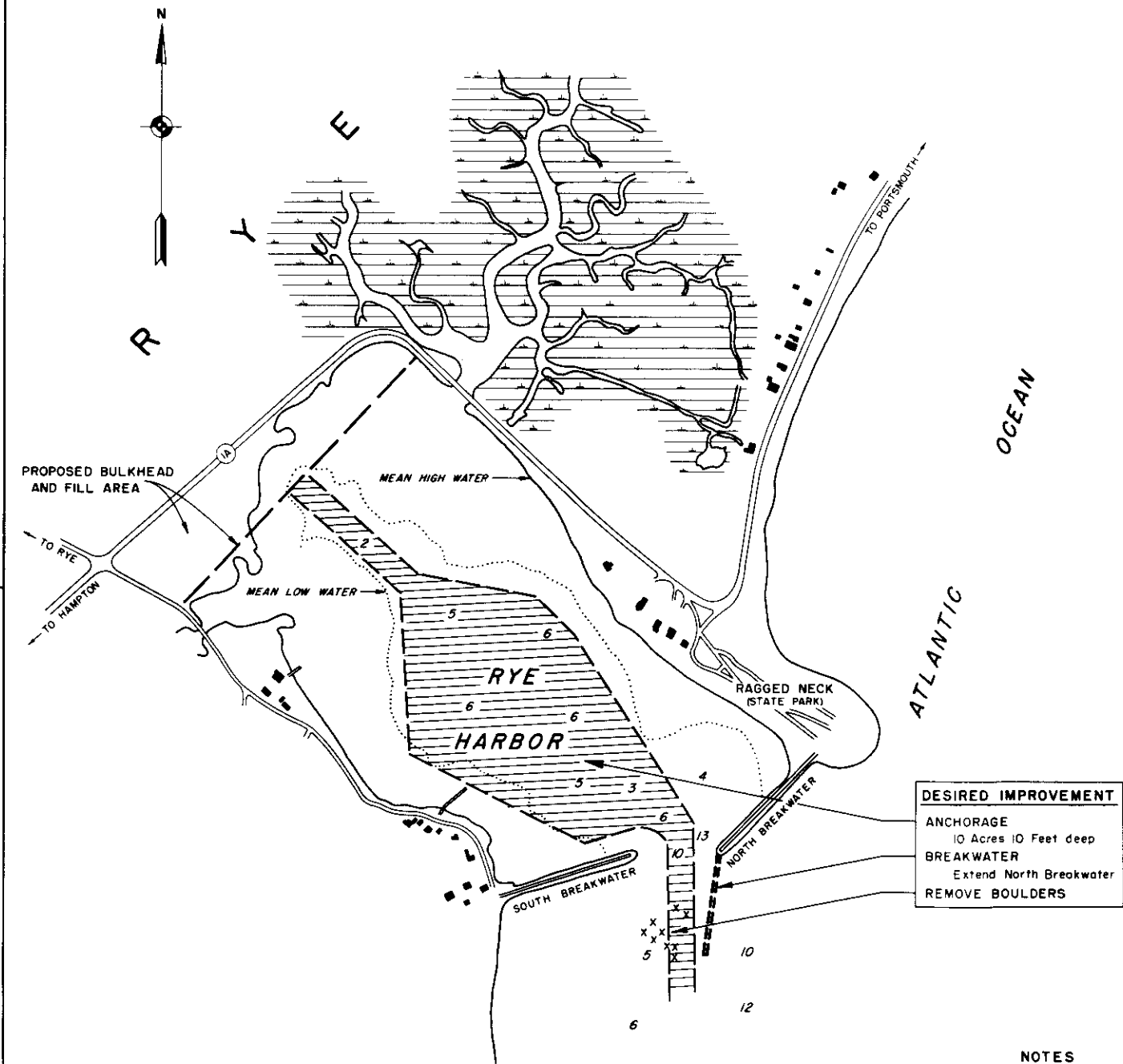
62. Existing and prospective small boat navigation by both recreational and fishing craft in Hampton River and Harbor and in Rye Harbor is considered sufficient to warrant further consideration of the improvements desired by local interests. Improvement of each harbor by dredging, removing rocks obstructing navigation, and extending existing jetties may reasonably be expected to result in extensive benefits. Though the two harbors lie only 8 miles apart, the intense recreational development of the brief New Hampshire coastal area, the lack of adequate small boat facilities along the coast, and the different nature of the two areas immediately tributary to the respective harbors indicate that the two improvements may be considered to complement rather than to duplicate each other. The nature of the prospective benefits indicate that a substantial degree of local participation in the improvements may be desirable. Local interests should be required to maintain existing public landing facilities at Hampton Harbor and to provide such facilities at Rye Harbor. It is believed that local cooperation may reasonably be expected. It is therefore concluded that surveys of both Hampton River and Harbor and of Rye Harbor are warranted at this time.

RECOMMENDATION

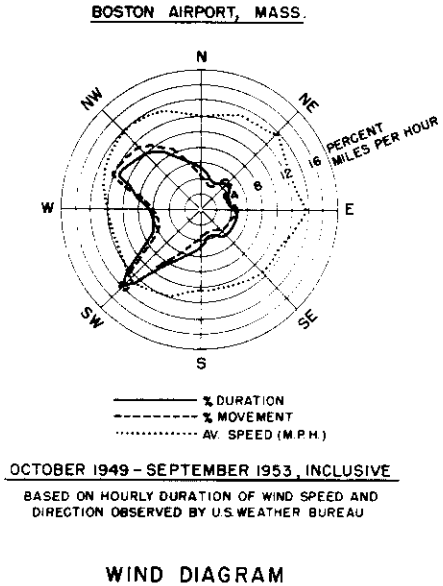
63. In view of the foregoing, the Division Engineer recommends that surveys be made of both Hampton River and Harbor and of Rye Harbor to determine the extent of improvement warranted in each location for both commercial and recreational navigation, the cost of providing such improvement, and the extent of local cooperation which should be required.

ROBERT J. FLEMING, JR.
Brigadier General, USA
Division Engineer

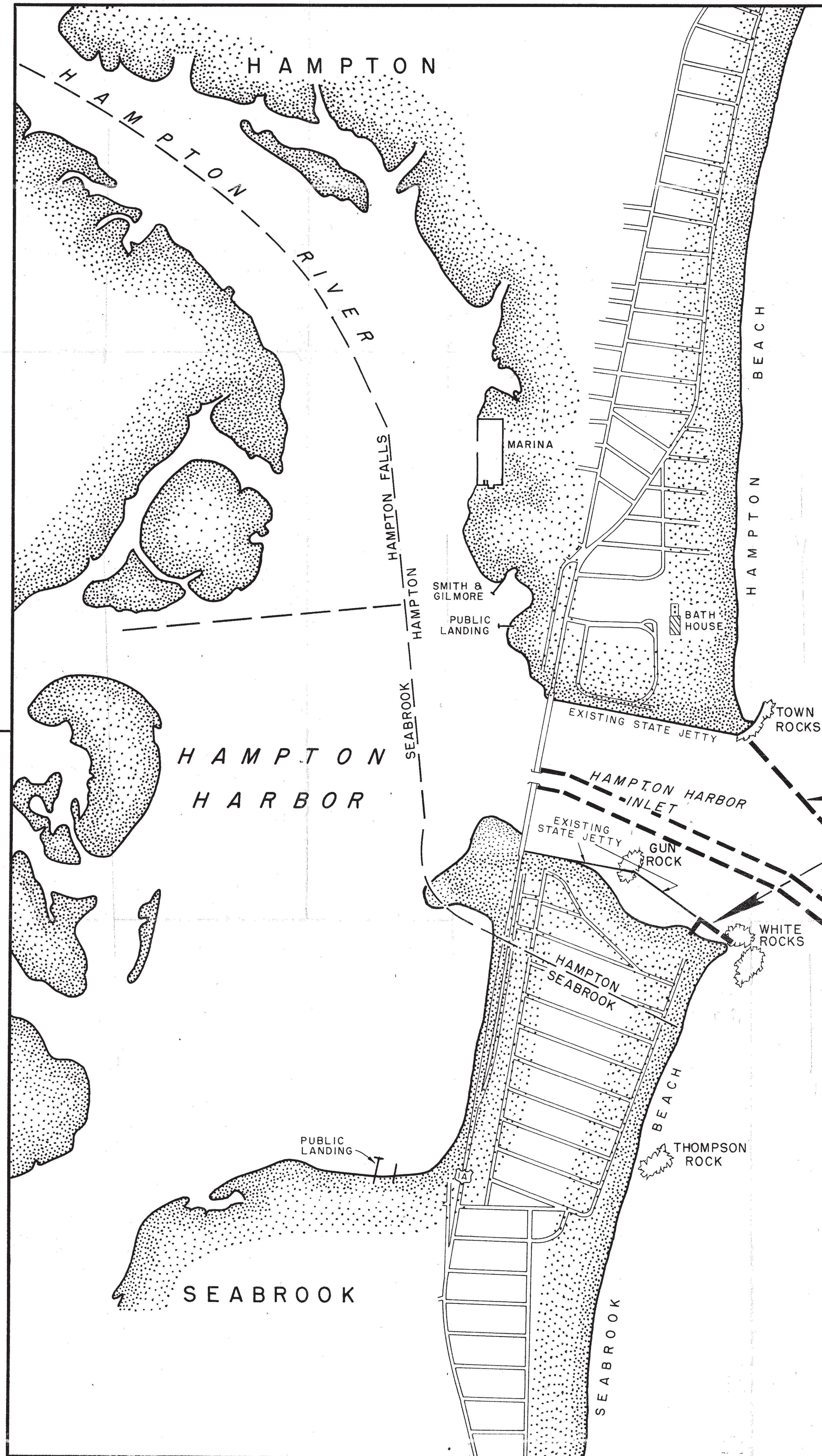




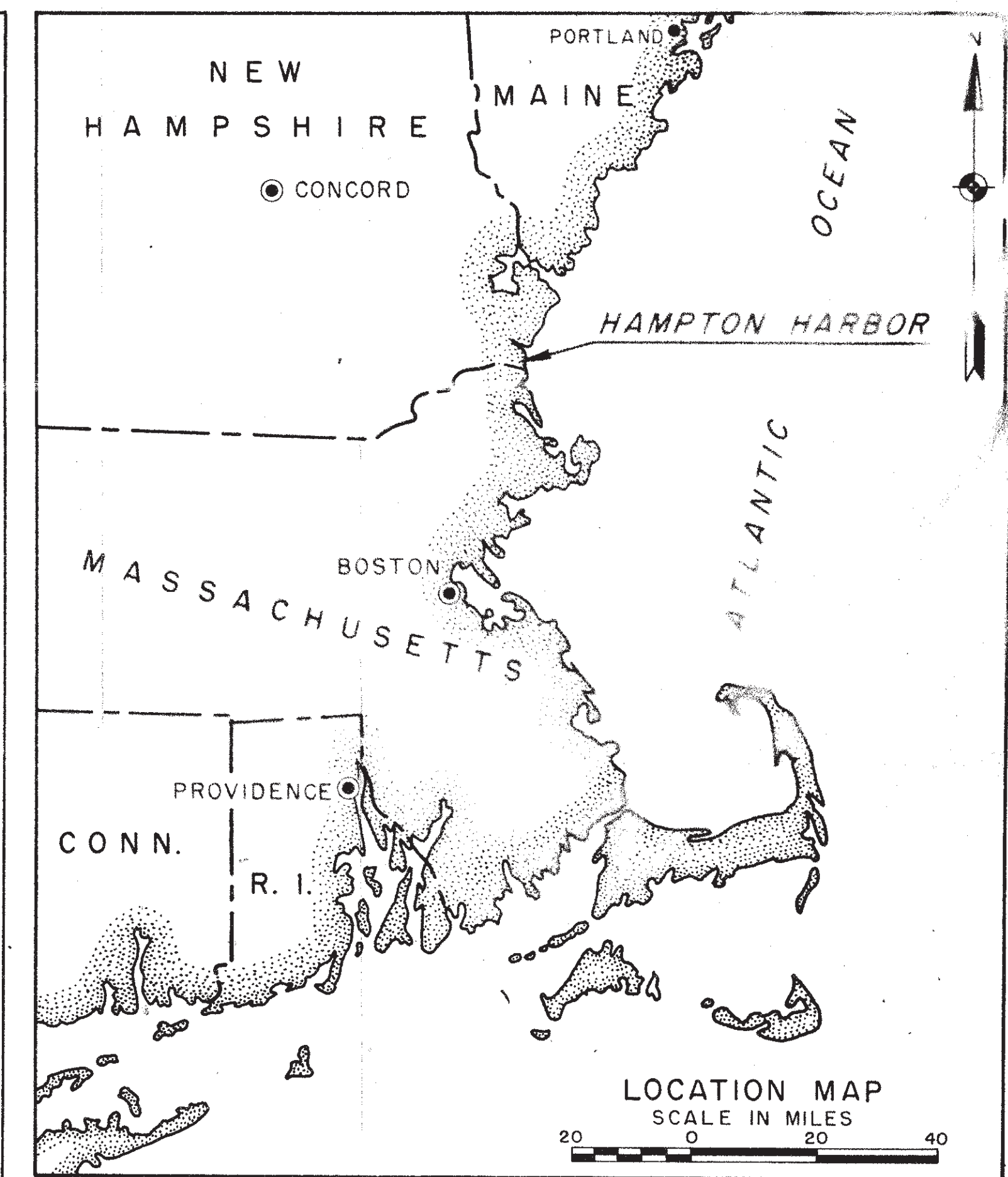
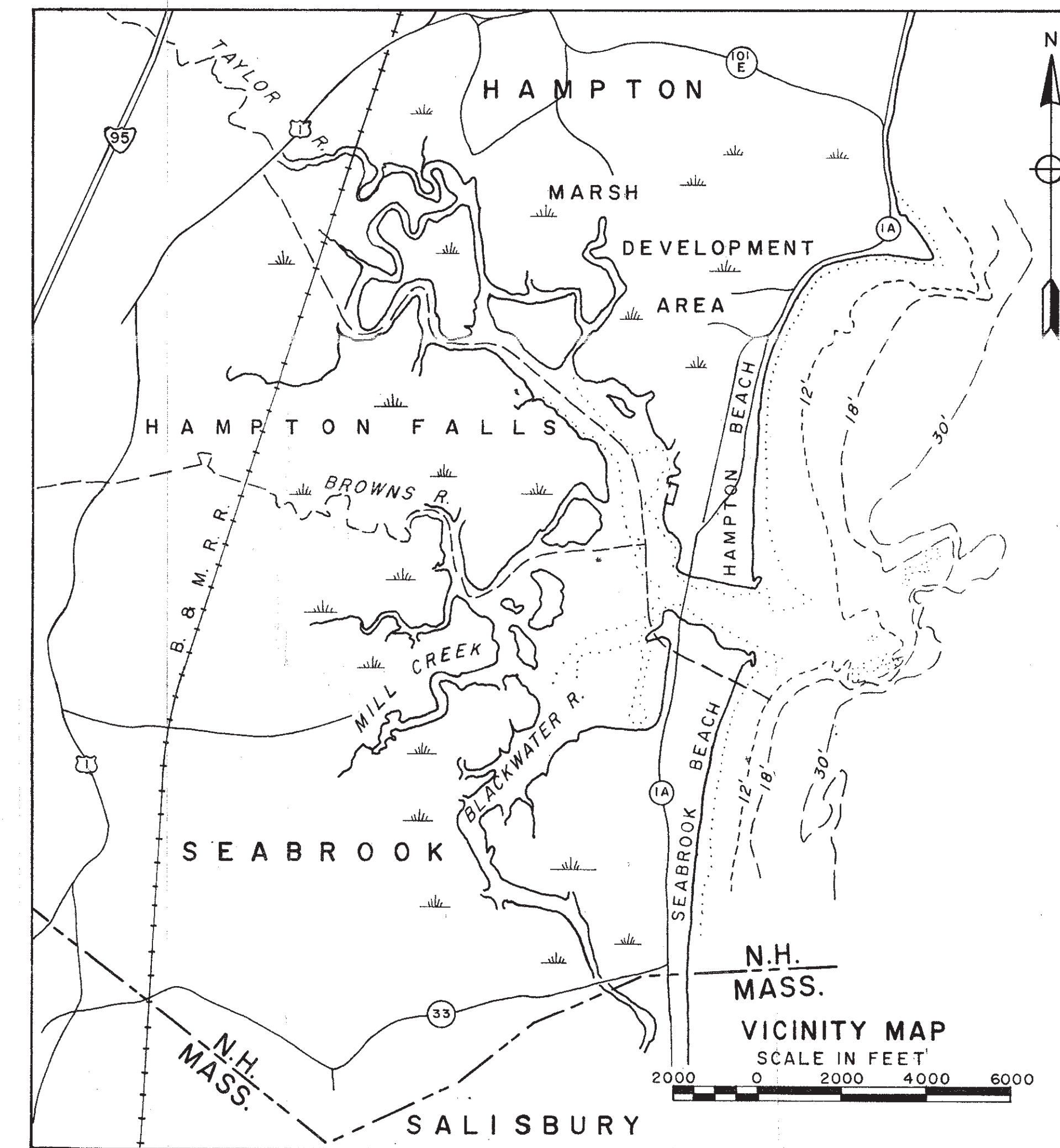
NOTES
Soundings are in feet and are referred to the plane of Mean Low Water.
Hydrography and topography from plan of Dept. of Public Works and Highways, State of New Hampshire.



RYE HARBOR NEW HAMPSHIRE	
14 SHEET	SCALE IN FEET 0 100 200 300
NEW ENGLAND DIVISION, BOSTON, MASS. MARCH 1956	
APPROVED <i>[Signature]</i> CHIEF ENGINEER	APPROVED <i>[Signature]</i> CHIEF OF BUREAU
SUBMITTED <i>[Signature]</i> CHIEF OF BUREAU	
TO ACCOMPANY PRELIMINARY EXAMINATION REPORT DATED MARCH 23, 1956	
FILE NO. 1282 D-4-4	



IMPROVEMENT AUTHORIZED
18 Feb. 1964 under Section 107
of 1960 River and Harbor Act
STONE JETTIES
ENTRANCE CHANNEL
8 FEET DEEP



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS, WALTHAM, MASS.	
HAMPTON HARBOR NEW HAMPSHIRE	
1 SHEET	SCALE IN FEET 500 0 500 1000 1500
MAR. 1964	
APPROVED CHIEF ENGINEERING DIVISION <i>[Signature]</i>	TO ACCOMPANY SURVEY REPORT DATED MARCH 1964
SUBMITTED CHIEF OF ENGINEERING <i>[Signature]</i>	
CHIEF OF ENGINEERING REPORTS BRANCH <i>[Signature]</i>	
CHIEF OF ENGINEERING REPORTS BRANCH <i>[Signature]</i>	
CHIEF OF ENGINEERING REPORTS BRANCH <i>[Signature]</i>	FILE NO. 1612 D-4-4